SAFETY ATTACHMENT FOR HINGED SIDE OF DOORS

This application is a continuation of application Ser. No. 07/134,835, filed Dec. 18, 1987, now abandoned.

BACKGROUND OF THE INVENTION

The present invention relates to a safety device for preventing injury to individuals or animals by stopping anything from entering an opening between a hinged door and the door frame, on either the front or rear face of the hinged side of a door.

The fingers and other body parts of countless children, adults and animals have been severely injured by being pressed between a door and its associated frame, due to inadequate safeguards. A prior art attempt to provide such a safe guard against injury is shown in U.S. Pat. No. 474,633. However, the device of this patent comprises a flat sheet of material which extends outwardly far from the door in some operative positions, and which is unattractive and obtrusive. Since only the flat main portion bends, relatively high forces are applied to the anchoring edges, requiring more secure and permanent types of anchoring.

Therefore, an object of this invention is to provide a simple, inexpensive, durable, reliable, unobtrusive and aesthetically pleasing safety or protective device for a door gap that can be added to an existing door and door frame, without damaging the door, the door frame or the adjacent molding.

Another object of the invention is to provide easy installation for the user, and to provide a door gap protective device that does not create high stresses or forces on the anchoring means for securing same in place.

A further object of the invention is to provide an easy-to-make, easy-to-store, easy-to-ship door gap protective device.

SUMMARY OF THE INVENTION

According to the present invention, a protective device for preventing injury by shielding body parts, particularly the fingers, from getting caught in either the front face or rear face gap at the hinged side of a door, comprises a flexible, protective member for continuously covering the gaps formed at the hinged side of a door when the door is opened and closed. One lateral edge of the protective member is fixedly attached to the molding or door frame or wall adjacent to the hinged side of the door. The protective member extends across the gap between the door and door frame or the like, to a point where the second lateral edge of the device is attached to the door. When the door is closed, at least one inwardly directed fold, curve, depression or re-entrant portion of the protective member placed on the front face of the hinged side of the door will be in its compacted or inwardly folded state. As the door is opened, the protective member will unfold or expand and cover the entire gap between the hinged side of the door and the door frame or the like, regardless of the degree of the opening of the door. The gap formed between the door and the door frame or the like is thus covered whether the door is completely or partially opened.

The same protective device can also be used on the rear face of the hinged side of the door. When the device is placed on the rear face of a closed door, the at least one inwardly directed fold, curve or depression or re-entrant portion is in its extended or unfolded state. The device returns to its compacted or folded state as the door is opened.

The protective device can cover the entire height of the door or any portion of the height thereof, and can be placed on either or both of the rear and front faces of the door.

The one or more folds, curves, depressions, re-entrant portions or joints of the protective member of the present invention reduces the pressure or force exerted on the lateral door and frame attachments and allow for a multitude of methods to be used for anchoring or attaching the protective device to the door and door frame or the like. This distribution or relief of pressure also reduces the chances of breakage or detachment from the door and/or door frame or the like. The sizes of the one or more folds, curves, depressions or re-entrant portions can vary from device to device to accommodate different sized doors. The distance between said one or more folds, curves, depressions or re-entrant portions can also vary on the same individual device, allowing for optimum folding or recoiling ability.

As used in the present description and claims, the term "door frame" means any structure to which a door is hinged. In some cases, for example, a door frame per se is not used - i.e., the door is hinged directly to a wall or other support structure. The term "door frame" thus includes any such structure to which a door is hingedly mounted.

As used in the present description and claims, the term "re-entrant" is used to generally designate any of the different inwardly directed portions of the protective members shown in the drawings and all equivalents thereof. Especially in the claims, the term "re-entrant" is so used for convenience and ease of description.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a top view of the hinged side of a door showing one embodiment of the present invention attached on both the front and rear faces of a closed door;

FIG. **2** is a top view of the door arrangement of FIG. **1** showing the door partially opened;

FIG. **3** is a top view of the door arrangement of FIGS. **1** and **2** showing the door completely opened;

FIG. **4** is a front view of a door showing an embodiment of a protective device of the present invention attached to a closed door;

FIG. **5** is a front view of an embodiment of a protective device of the present invention attached to a partially opened door, and with the protective device extending up only partially from the bottom of the door;

FIG. **6** is a rear view of the partially opened door of FIG. **5**.

FIG. **7** shows a "recoiling" re-entrant tube-type of protective device according to another embodiment of the present invention, attached to both the inner and outer faces of a closed door;

FIG. **8** shows the recoiling re-entrant tube-type device of FIG. **7** with the door opened;

FIG. **9** shows another type of recoiling re-entrant tube-type device according to the present invention which is similar to that of FIGS. **7** and **8**;

FIG. **10** shows a front perspective view of a pair of accordion-folded-type of protective devices of the present invention, in a substantially folded form, in a condi-